

## RF Power MOSFET Transistor 2 W, 500 - 1000 MHz, 28 V

Rev. V1

### Features

- N-Channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- Common source configuration
- Lower noise floor
- Applications
  - Broadband linear operation  
500 MHz to 1400 MHz
- RoHS Compliant

### Absolute Maximum Ratings @ 25°C

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	65	V
Gate-Source Voltage	$V_{GS}$	20	V
Drain-Source Current	$I_{DS}$	0.7	A
Power Dissipation	$P_D$	8	W
Junction Temperature	$T_J$	200	°C
Storage Temperature	$T_{STG}$	-55 to +150	°C
Thermal Resistance	$\theta_{JC}$	21.8	°C/W

### Typical Device Impedance

F (MHz)	$Z_{IN}$ ( $\Omega$ )	$Z_{LOAD}$ ( $\Omega$ )
500	10.0 - j41.5	40.0 + j53.0
1000	4.2 - j12.0	11.85 + j33.0
1400	3.5 - j1.0	7.5 + j23.3

$V_{DD} = 28V, I_{DQ} = 25mA, P_{OUT} = 2.0 W$

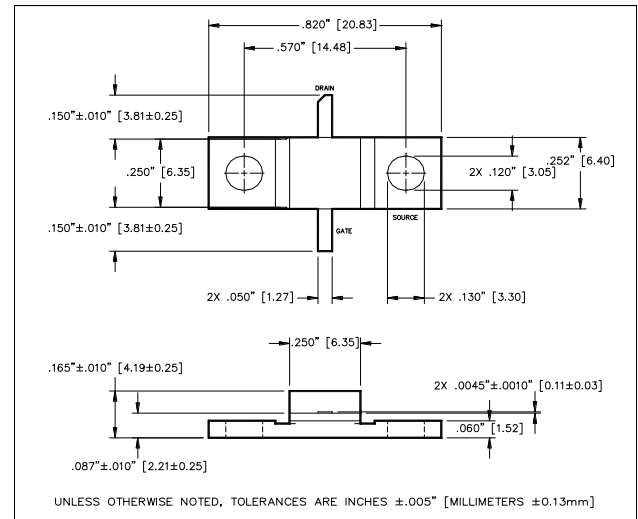
$Z_{IN}$  is the series equivalent input impedance of the device from gate to source.

$Z_{LOAD}$  is the optimum series equivalent load impedance as measured from drain to ground.

### Electrical Characteristics @ 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	65	-	V	$V_{GS} = 0.0 V, I_{DS} = 1.0 mA$
Drain-Source Leakage Current	$I_{DSS}$	-	0.5	mA	$V_{GS} = 28.0 V, V_{DS} = 0.0 V$
Gate-Source Leakage Current	$I_{GSS}$	-	0.5	$\mu A$	$V_{GS} = 20.0 V, V_{DS} = 0.0 V$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS} = 10.0 V, I_{DS} = 5.0 mA$
Forward Transconductance	$G_M$	40	-	mS	$V_{DS} = 28.0 V, I_{DS} = 50.0 mA, \Delta V_{GS} = 1.0V, 80 \mu s$ Pulse
Input Capacitance	$C_{ISS}$	-	3.5	pF	$V_{DS} = 28.0 V, F = 1.0 MHz$
Output Capacitance	$C_{OSS}$	-	3.75	pF	$V_{DS} = 28.0 V, F = 1.0 MHz$
Reverse Capacitance	$C_{RSS}$	-	1.2	pF	$V_{DS} = 28.0 V, F = 1.0 MHz$
Power Gain	$G_P$	10	-	dB	$V_{DD} = 28.0 V, I_{DQ} = 25 mA, P_{OUT} = 2.0 W F = 1.0 GHz$
Drain Efficiency	$\eta_D$	40	-	%	$V_{DD} = 28.0 V, I_{DQ} = 25 mA, P_{OUT} = 2.0 W F = 1.0 GHz$
Load Mismatch Tolerance	VSWR-T	-	20:1	-	$V_{DD} = 28.0 V, I_{DQ} = 25 mA, P_{OUT} = 2.0 W F = 1.0 GHz$

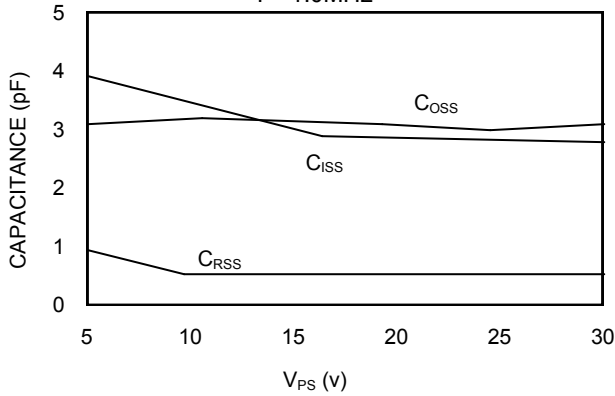
### Package Outline



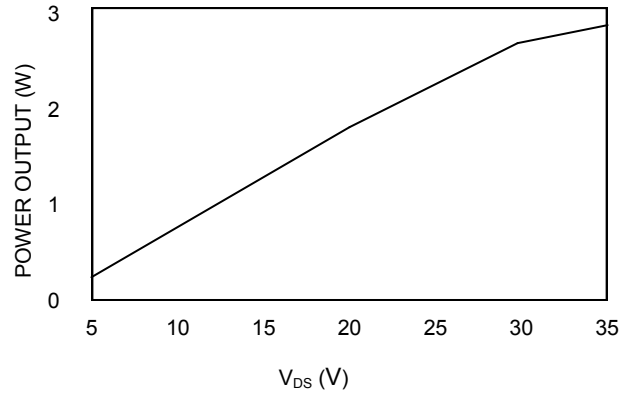
LETTER DIM.	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	20.70	20.96	.815	.825
B	14.35	14.61	.565	.575
C	13.72	14.22	.540	.560
D	6.27	6.53	.247	.257
E	6.22	6.48	.245	.255
F	6.22	6.48	.245	.255
G	1.14	1.40	.045	.055
H	2.92	3.18	.115	.125
J	1.40	1.65	.055	.065
K	1.96	2.46	.077	.097
L	3.61	4.37	.142	.172
M	.08	.15	.003	.006

**Typical Broadband Performance Curves**

**CAPACITANCES vs VOLTAGE**  
 $F = 1.0\text{MHz}$

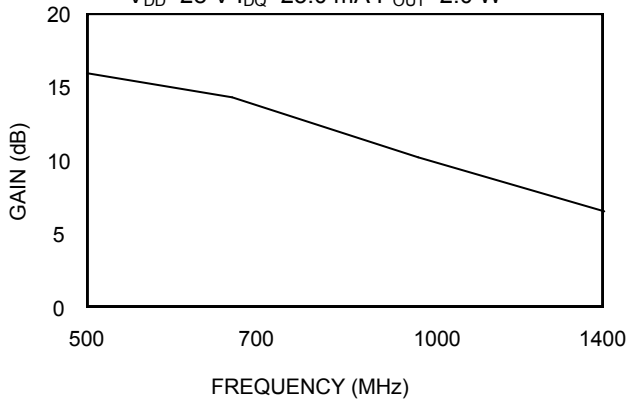


**POWER OUTPUT vs VOLTAGE**  
 $F = 1.0\text{GHz } P_{IN} = 2.0\text{ W } I_{DQ} = 25\text{ mA}$



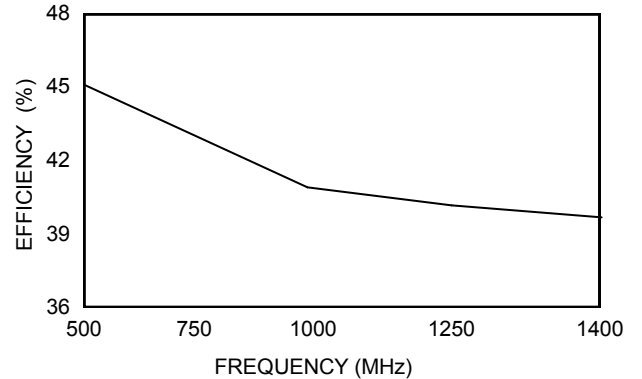
**GAIN vs FREQUENCY**

$V_{DD} = 28\text{ V } I_{DQ} = 25.0\text{ mA } P_{OUT} = 2.0\text{ W}$



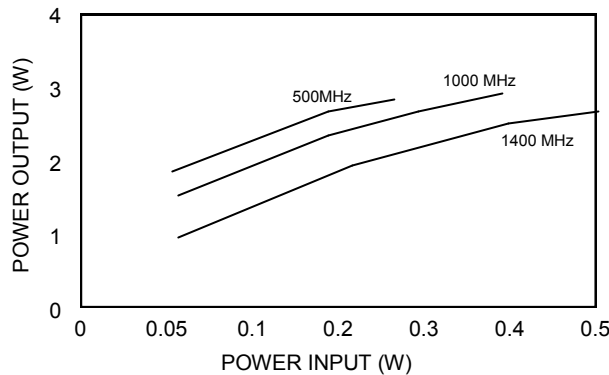
**EFFICIENCY vs FREQUENCY**

$V_{DD} = 28\text{ V } I_{DQ} = 25.0\text{ mA } P_{out} = 2.0\text{ W}$



**POWER OUTPUT vs POWER INPUT**

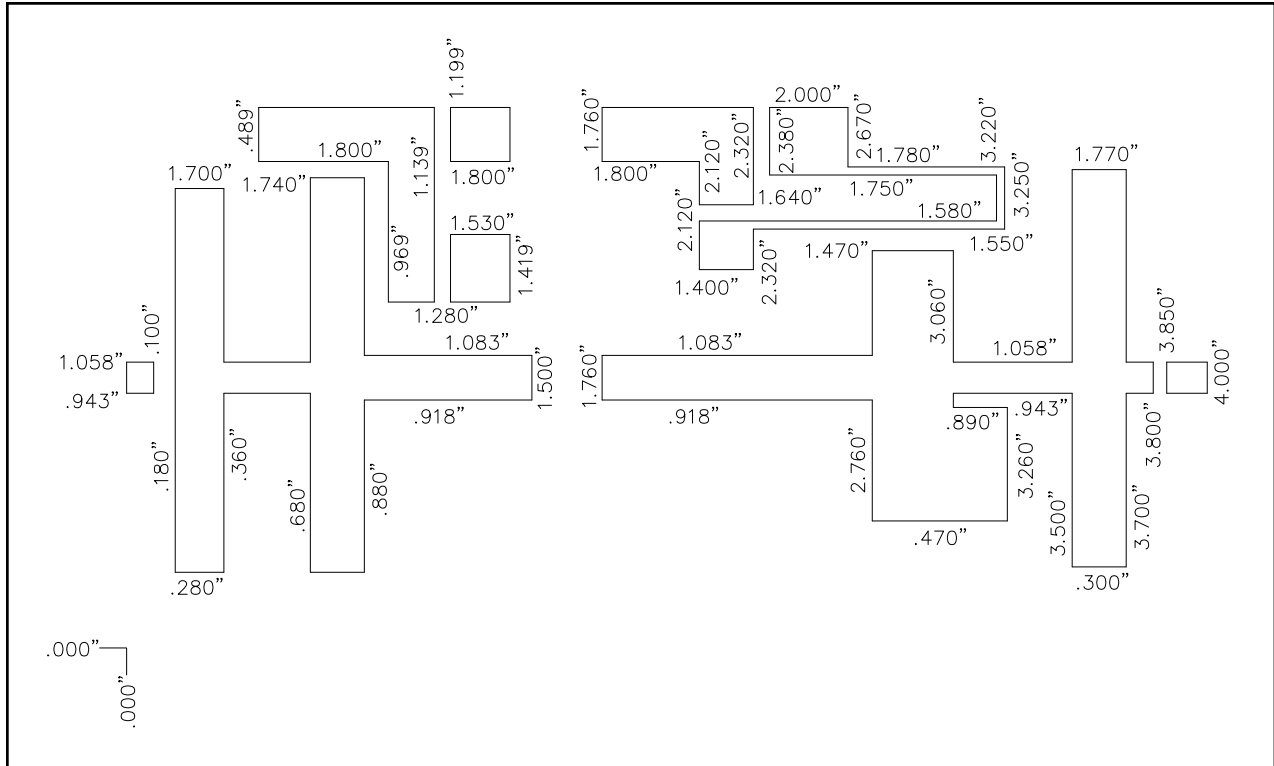
$V_{DD} = 28\text{ V } I_{DQ} = 25.0\text{ mA}$



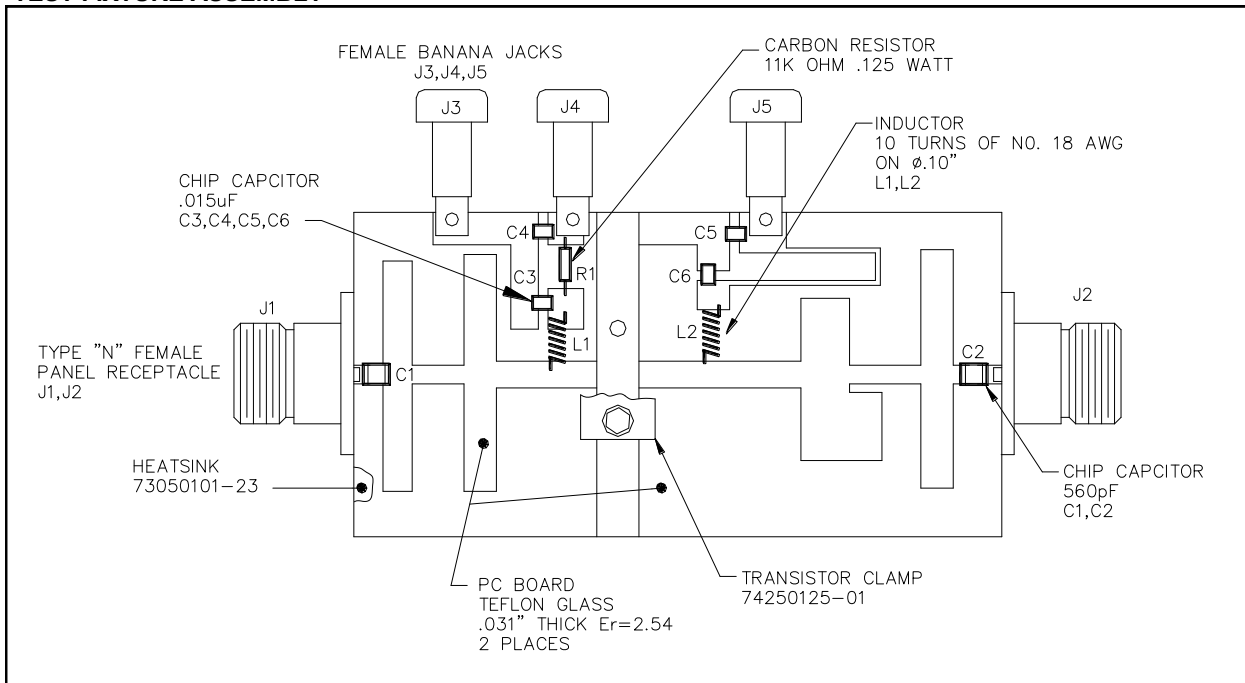
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### TEST FIXTURE CIRCUIT DIMENSIONS



### TEST FIXTURE ASSEMBLY



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